

Study on the Application of MTPE in Emergency Language Service

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Abstract: Machine translation and emergency language service, two fields that have grown rapidly in recent years, have many points of intersection. MTPE applications are increasingly being used in the language service industry, giving the language service industry more room for development and advantages. Emergency language service are gaining more and more attention after the pandemic, and the MTPE model can accelerate the construction and improvement of emergency language services. This thesis focused on the application of MTPE in emergency language service and analyses the advantages that the MTPE model brings to emergency language services at both the linguistic and functional levels. The translator translated a report on the new vaccine for COVID- 19 as a sample emergency language service product under the MTPE model, and a survey is then conducted in the form of questionnaire asking recipients to read the translation and give feedback. Through a questionnaire survey and a study of the translation, this thesis summarizes the shortcomings that still exist in machine translation, and some specific feasible post-editing strategies, suggesting that we should not rely too much on machine translation progress but rather enrich post-editing strategies.

Keywords: Machine translation; Post-editing; Emergency language service; Pandemic.

1. Introduction

1.1. Research Background

Emergency language service refers to the provision of rapid relief language products, language technology, or participation in language rescue operations for the prevention and monitoring, effective disposal, and reconstruction of major natural disasters or public crisis events (Wang, Ren, Sun, and Meng, 2020). It includes emergency translation of Chinese and foreign languages, minority languages, dialects and sign language for people with disabilities; research and development of disaster relief language software; dissemination of disaster information; resource management of disaster relief language; development of emergency language standards; emergency language training; language therapy and rehabilitation, as well as language counseling and crisis intervention. Recently, the role of emergency language service has received attention in China's three-year-long nationwide campaign against the pandemic. In the pandemic, the emergency language service started by providing emergency mobilization and scientific publicity, followed by national assistance to Wuhan, the production of a dialect manual, and the formation of a language service team and a foreign language manual for preventing and controlling the pandemic. And then various global reports on the pandemic and translations of technical documents were also provided. The events during the spread of COVID- 19 exposed the weakness of China's emergency language service infrastructure, which still needs to be improved and strengthened. Meanwhile, Wang Hui, Secretary of the Party Committee of the China Economic Times, claimed that emergency language capacity is an important manifestation of the social governance capabilities brought about by modernization (Li, Zhao, and Hao, 2020). Emergency language services, as an independent language service system, are an important component of language services and a major key to realizing the progress of modernization in the late stage

of vaccination, with a status that cannot be underestimated.

With the advent of artificial intelligence(AI), machine translation post-editing (MTPE) is being used more and more extensively in language services. Specifically, post-translation editing of machine translations (MTPE) is the process of enhancing the output of machine translations by manual and partially automated means to meet specific quality objectives"(Cui, 2014). The MTPE model enables delivering information more quickly and efficiently to make sure the recipients have the best possible response in a timely manner, thus improving the quality of pandemic prevention to a certain extent.

1.2. Research Purpose and Significance

This study of emergency language service under the MTPE model will, on the one hand, provide insight into how emergency language service has facilitated and benefited our pandemic prevention work, social security, and daily lives. And on the other hand, it reflects on the shortcomings and details for improvement in our emergency language service system, as well as providing a new perspective for language service practitioners. Unlike countries such as Japan and Iceland, which have a mature emergency language service system, emergency language service is still a new field in China and need more fresh blood to participate in its development and progress, and it should receive more attention after this major public health emergency, the COVID- 19 epidemic.

1.3. Research Theory and Method

The study uses the emergency language service products of the pandemic as a case study to analyse the communication and dissemination role it plays under the MTPE model through translation practice, comparing it with other emergency language service products of the same period, to discover the positive or negative impact of the MTPE model on emergency language services. Using a report on new vaccine development as an example, samples of the general

public who are not familiar with the language service industry were surveyed to understand the public's acceptance of this kind of reports, and their understanding of emergency language service under the MTPE model. The study not only analyses the current situation and development prospects of emergency language service under the MTPE model from the products, but also focuses on the positive optimization of emergency language, discussing the characteristics and advantages of emergency language services under the MTPE model as well as the shortcomings that still exist, then laying the foundation for future practice.

2. The Benefits of the MTPE Model for Developing Emergency Language Services

2.1. The Convenience and Accuracy of the MTPE Model

In recent years, an increasing number of Language Service Providers (LSPs) have started to adopt the MTPE model, i.e. "machine translation + post-editing". As machine translation based on neural network technology is increasingly used in various fields, Some language service segments that had been neglected or even abandoned due to the inefficiency and high cost of human translation, such as translation services for travel abroad and localisation of information-rich e-commerce websites and instant translation of social media messages, have also seen rapid growth in business as machine translation technology continues to mature. In terms of Chinese-English machine translation, current research on human-machine translation focuses on post-editing, concentrating on error analysis and editing strategies for specific texts. At the same time, post-editing is widely used in the global language services industry, with leading companies such as Microsoft and SDL International having their own teams of post-editors.

Speaking of MTPE, it's important to understand how machine translation works. Take Google Translate as an example. Google Translate is constantly learning and evolving, and it is obvious that it is constantly improving while being used. Actually, over a period of time it is exposed to many similar sentences, and this content leaves a memory in the neural network that allows Google Translate to respond more accurately when translating. It has a memory capacity far beyond that of the human brain. Meanwhile, Google Translate can quickly build sentence structures. When faced with ordinary written language, Google Translate can quickly break sentences and reconstruct the structures of the sentences in the target language.

2.2. The Primary Need for Emergency Language Services

O'Brien et al. (2018) state that the increasing diversity of the global community has a significant impact on the effective transfer of information between stakeholders during disasters and that there is an urgent need to increase access to information by people from different cultures and speaking different languages. Alexander & Pescaroli(2020) state that the diversity of community groups increases the complexity of communication, and disaster relief translation requires a communication strategy that takes into account the beliefs, needs, and goals of specific social groups and meets the needs of marginalized individuals or communities.

According to the above needs, the MTPE model is ideally suited for application in emergency language service. The translated content in the MTPE model becomes more culturally relevant to the target language as the machine translation incorporates a rich diversity of information from the internet. Besides, the artificial editing process is also able to take into account the communication experiences of specific social groups, for example in terms of beliefs and humanistic concerns. This can be described as a very comprehensive adaptation to the main part of disaster relief translation, which is the most vital part of the emergency language service.

2.3. The Significance of Universal Access to the MTPE Model in Emergency Language Services

Since the Neural Network Machine Translation (NMT) model was proposed in 2014, the quality of machine translation(MT) has improved significantly. With the continuous improvement of neural network technology, the translation accuracy of professional texts can reach 75% and that of news texts can reach about 70% as the training corpus becomes more adequate (Zong Chengqing 2020:3). This means that the quality of MT translations is constantly improving and greatly increased the productivity when compared to traditional human translations. During the period of the pandemic, people and governments are becoming aware that the demand for emergency language services is increasing, as is the demand for productivity. The MTPE model, which uses machine translation, does not require excessive human resources, reduces labour costs, and can meet the increased demand for emergency language services.

On top of that, as the MTPE model is applied in more and more fields, the related corpus tends to mature. Allen (2003) describes post-editing as "by far the most relevant task for machine translation". Daniel Marcu suggests that "post-editing is the process by which language experts edit the output of machine translations to produce human-quality translations". De Palma (2013) defines post-editing as "the process of improving the quality and suitability of a translation through human review and editing"(Cui, 2014). The MTPE model not only fully satisfies the need for professionalism, but also lowers the threshold for translators, enabling more and more translators of different levels to participate in the emergency language service process. Taking an example, verbal reassurance, which refers to the use of verbal products to help individuals and groups to avoid the spread of negative emotions or transform them into positive ones(Zheng and Xu, 2020), is generally required after a disaster like an earthquake or an air accident. The number of people in need of verbal reassurance after such a disaster, which can cause a great deal of stress, is huge. Some volunteers in disaster areas do not have excellent language skills, but their ability to empathize with and reassure people is actually far superior to that of some professional interpreters. This means that when they can use the corpus and mechanical translation to apply the simple MTPE model, they can provide effective comfort to victims from different cultural background and speaking different languages.

3. Exploring the Impact of MTPE on Emergency Language Service Products: Case Study

3.1. Translation of the Report on the Development of the COVID-19 Vaccine in China

When it comes to the use of emergency language service in China in recent years, pandemic prevention publicity and education have been the most common and most used. The pandemic prevention campaign helps to strengthen the safety awareness of people, and the translation of it can dispel the prejudices and misunderstandings of people not only at home but abroad in the events of the epidemic. Therefore, the translator chose a report named *Protein-based booster shots help fight Omicron from China Daily* (Zhang, 2023), which is about new vaccines for COVID-19, for translation practice, using the MTPE model to verify the above theories.

The report focuses on two new protein vaccines that have been launched in China as boosters against the Omicron subvariant, which helps protect immunocompromised people. Some proper nouns, such as "Omicron" appear in the content, requiring translators to translate them phonetically to facilitate the reader's understanding. As the logic of the English text differs from that of the Chinese text, and although the machine translation has roughly rebuilt the sentences' structure, to consider the target group of the translated text, which is a factual report for the people, the translator still should adjust the language order and delete some of the content to make the translation easy to understand. Overall, the process of translating this article would be a very typical MTPE model translation, allowing the translator to fully experience how to advance the MTPE model of emergency language service.

Meanwhile, this report was chosen for several reasons. Firstly, the report covers a number of medical and chemical proper nouns, which would have taken a lot of time to review if a traditional translation had been carried out, better reflecting the professional and efficient advantages of emergency language service under the MTPE model. Secondly, the vaccine has been highly emphasized by the people since the gradual lifting of the pandemic in China. This report responded to people's concerns by informing the public about the ingredients and improvement programs of the vaccines, as well as revealing the testing and promotion process of the new vaccines. In addition, some reports in Chinese with similar content to this article were already reported in some major official media, and the completed translation can be read in comparison with these official Chinese reports. Finally, the report is a recent emergency language service product, making this translation practice even more relevant.

3.2. The Experience of the Translator

First of all, while preparing for the translation, the translator read a lot of official domestic reports about the new COVID-19 vaccines and gained some understanding of relevant policies and special terms. For example, the National Health Commission promotes vaccine booster shots, and local health codes will indicate whether the first, second, or even third shot will be administered. The translator then consulted social media and relevant books on this field to build a simple corpus for post-translation correction. For

example, Omicron subvariants could have been translated by machine to "奥密克戎亚变体", but as it is commonly referred to as "奥密克戎亚型毒株" in the official media and popular discussions, changing it to the latter makes it easier for readers to understand and access key information. Also, as explained before, Google Translate translates texts in professional areas, including medicine, with up to 75% accuracy, eliminating the need for translators to consult a large number of medical sources and dictionaries and reducing the burden of preparation for the translator.

During the translation process, the translator first used Google Translate to machine translate the content of the original text. It is worth mentioning that Google Translate, as one of the most advanced translation applications in the world, has been criticized by the public for its poor interactive translation. Although Google Translate has improved in recent years as AI technology continues to develop, the translations translated through Google Translate still read very stiffly, and many do not conform to Chinese grammar. The translator had the same problems with the translated content. Therefore, the first thing that translator did while post-translation editing was to adjust the sentence structure so that the sentence clusters were reasonable, and to increase the number of linking words between paragraphs to make the article structured smoothly. In post-editing, the translator deletes unnecessary content, such as some additional explanations, which have a well-known meaning to natives and thus do not need to be explained. For example, the report describes that "...when administered as a booster shot for those inoculated with inactivated vaccine, which is a large portion of the Chinese population." Google Translate translates it directly as "当它们作为接种灭活疫苗的人(占中国人口的很大一部分)的加强针时". Since it is a well-known national fact in China that most Chinese people have received vaccines, the sentence is unnecessary to add a description of the population size, so the translator has streamlined the sentence to "当他们作为新冠疫苗加强针时". On the other hand, due to the high accuracy of Google Translate, there are no major lexical problems with unedited texts, and the translator felt very comfortable making corrections with the corpus.

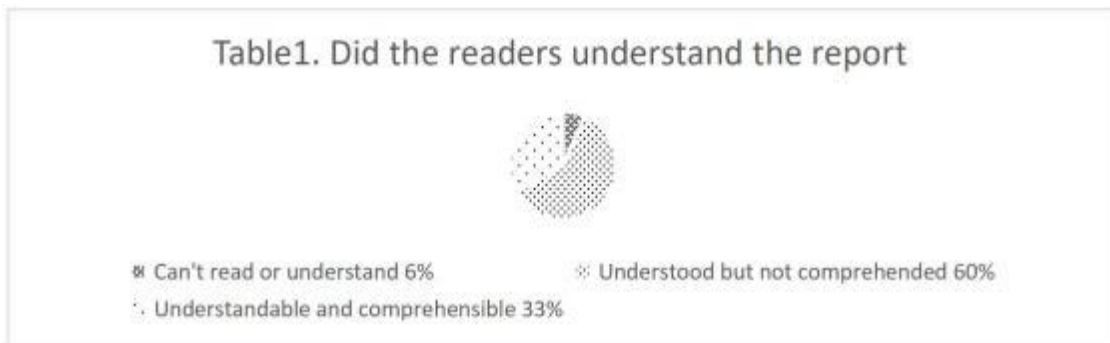
Post-editing is the most important step of the MTPE model, and this step exactly tests the translator's professional skills and abilities the most. The translation of this report was moderately difficult in terms of length, and would have been very difficult and time-consuming if it had been translated by a traditional manual translation method. Some compound-complex sentences like "The two vaccines are also recommended as a booster for those inoculated with three inactivated vaccines, according to the National Health Commission's second booster dose campaign targeting older adults and immunocompromised individuals" are difficult in classifying sense-groups and converting to formal Chinese sentence structure. However, the machine translation was so convenient that the translator, an undergraduate with little knowledge of medical chemistry, was able to translate the article in less than two hours. The translation of this sentence after machine translation is "根据国家卫生委员会针对老年人和免疫功能低下人群的第二次加强剂接种活动,还建议将这两种疫苗作为接种三种灭活疫苗的加强剂." The translator edited the translation to "在此之前,第二次加强剂接种活动主要针对老年人和免疫力低的人群,因此国家卫生委员建议这两种疫苗可以作为第三次加强剂接种

活动推广。”having made this sentence more pauses by repositioning the sentence elements to make the division of sense-groups more obvious. It is worth noting that the English translation norms of all Chinese media are regulated by the *China daily*, so the translation of COVID-19 and the National Health Commission appearing in the text are authoritative translated that cannot be changed. However, it can be seen that there is not much difference between the machine translation and the post-edited translation in terms of content, but the post-edited translation is more fluent. As a native speaker of the target language, the translator believes that the MTPE model for translation of emergency language

service products makes the production process shorter, simpler, more efficient, and of better quality.

3.3. The Perception of the Readers

In order to better evaluate the MTPE model working on emergency language service, the translator invited 30 adults who usually follow the news about the development of the COVID-19 vaccines to read the translated article and participate in a questionnaire. The questionnaire asked the participants about their experience reading the translation and their perceptions of the emergency language service, the results of which are shown below:

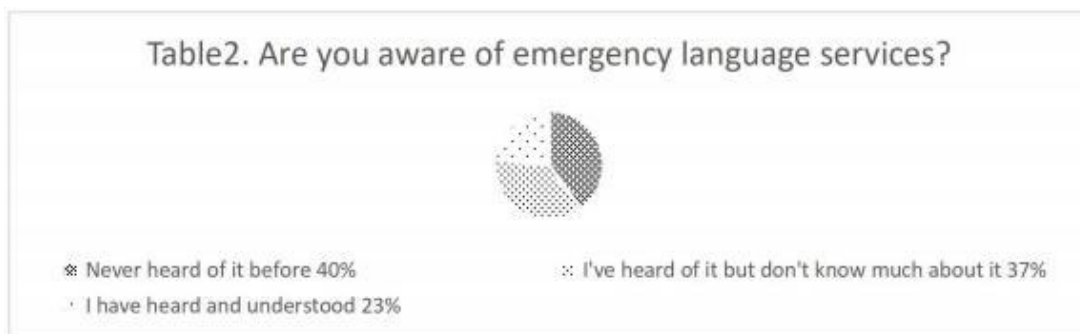


According to the table1, more than half of the participants were unable to comprehend or understand this report. The participants were all under the age of 30, and most of them had graduated from or were enrolled in a university, so they all had some reading comprehension skills. The translator asked some of these participants and got to know that they were unable to obtain effective information in the unfamiliar field due to the large amount of jargon, and that the content was too complex and lengthy to read. The text was not concise and focused enough as a report, and that some sentences seemed very stiff, so the reading process was tedious. Without the translator explaining that the report was translated with MTPE model in advance, many participants commented that the translation ‘looked machine-translated’. The translator felt that this was due to the lack of professionalism which led to the post-editing that made the article less enjoyable to read. Although all the participants as native Chinese speakers have some reading abilities and have been exposed to both English and Chinese, most of them do not have good bilingual skills. The article provided for these persons should follow the logic of the Chinese language;

otherwise, it will be difficult for native Chinese speakers to read. This shows that the language product of the MTPE model is still related to the translator's own linguistic ability and translating skills, and that the translator's professional techniques should not be neglected because of the availability of machine translation.

The translator also found that 7% of the participants, who were medical and biology majors, were very receptive to the content and paid more attention to the details of the report, which led the translator to conclude that highly specialized texts are more suitable for people with relevant expertise, whereas the audience for this report should be a wide range of people with access to the news media. So many of the samples in the survey said they couldn't understand.

This questionnaire also surveyed the participants about their knowledge of emergency language service. In the questionnaire, the translator pointed out that prevention publicity and education during the pandemic, which are similar to this report, are emergency language service products



According to the table 2, the figures show that 77% of the participants responded that they did not know it at all. The translator thinks that our people have in fact been exposed to many emergency language service products in recent years, but they have little knowledge of them because no one has

taken the initiative to educate them about it. Only 23% of the participants in the questionnaire said that they were aware of emergency language service, and the translator contacted one of them to find out that his knowledge of emergency language service came from his hobby of

watching disaster documentaries, and that he certainly had not studied them systematically. The translator therefore considers that there are too few channels to popularize emergency language service in China, and that there is no dedicated platform for people to learn about it. It is also important to note that the application of MTPE model in emergency language services needs more people who understand machine translation and can use modern technology to participate in its construction, and that the age group of university students will be the backbone of these people. The final question of the questionnaire was whether the MTPE model of emergency language services was of interest to them and received a 100% 'yes' response, which the translator was pleased to see, but also eager to see the knowledge of emergency language services and MTPE translation become more widespread.

4. Conclusion

After this translation practice, the translator believes that, firstly, the application of MTPE model in emergency language service has obvious advantages outweigh the traditional model, as it can deliver information to the public more quickly and accurately, bringing convenience to both translators and readers. At the same time, however, although the constant optimization of mechanical translation in the MTPE model has lowered the threshold for translators to participate in the work of emergency language service, the post-editing process still requires professional language skills. On top of this, emergency language service are humanistic and sensitive to multicultural audiences, and translators need to constantly improve their skills in this regard. Then, for translators with less mature translation techniques, as the first and foremost purpose of the emergency language service is to convey important information in an emergency event, the translation should be more focused and not forced to be very professional, not relying too much on machine translation to make the translation heavy, so that the majority of people can read or listen to it.

Overall, the combination of MTPE, a rapidly developing new area, and emergency language services, also a developing field, is creating a positive chemical reaction. As the COVID-19 epidemic comes to an end and measures of protection from the pandemic are phased out, people and governments are beginning to reflect on the construction of emergency language service. In order for the emergency language service to maintain its current impressive growth rate and even take it to the next level, in this period of rapid

development from the information age to the age of artificial intelligence, where neural networks have become a catalyst for rapid development in many fields, it can be argued that the MTPE model of emergency language services can be developed more rapidly and sustainably.

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